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**E01C 19/43**

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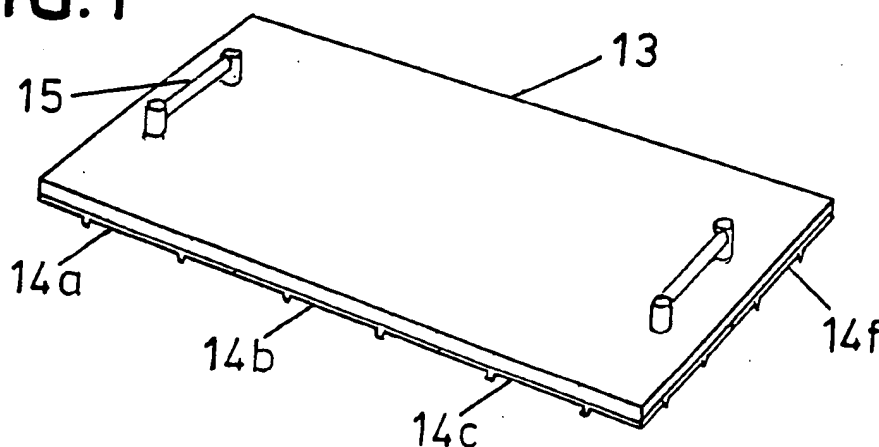
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**US 4231677 A** **US 4135840 A**

(58) Field of search  
**UK CL (Edition J) E1G**  
**INT CL<sup>\*</sup> E01C**

(54) **Tool for imprinting patterns in concrete**

(57) A tool comprising: a platform (13); means for lifting (15) which may be a handle or a plurality of handles or anchor points to receive lifting tackle; means which may be screws, bolts or the like for securing the said means for lifting to the topside of the said platform; an impression plate (14) or a plurality of impression plates (14a to 14f) arranged, assembled and secured to the underside of the said platform in a two dimensional array of rows and columns in the concept of an X-Y matrix the said impression plates being characterised by a panel (18) having a blade (17) or a plurality of blades which may be "V" shaped the said blades being integrally manufactured, formed, cast or moulded on the underside of the said panel such that the said blades are perpendicular to the plane of the said panel the said blades being arranged such as to define a pattern which may be imprinted in the form of impressions or grooves in or on the surface of freshly laid concrete; and a plurality of fixings (16) which may be screws, bolts or the like for securing the said impression plates to the said platform.

**FIG.1**



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FIG. 1

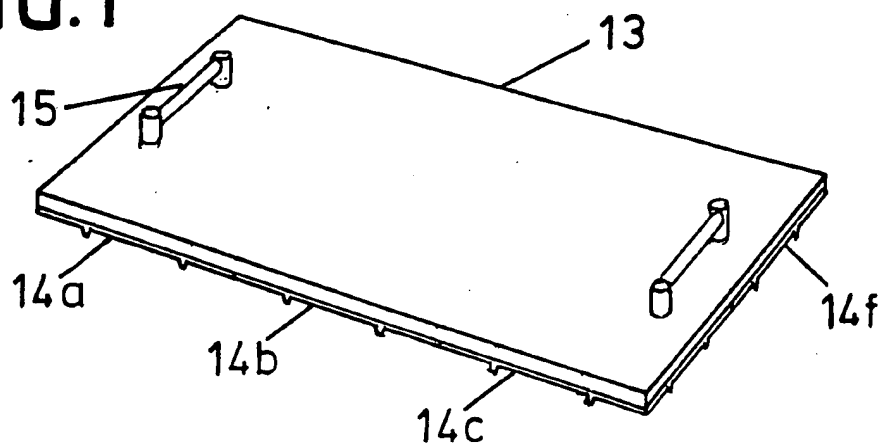
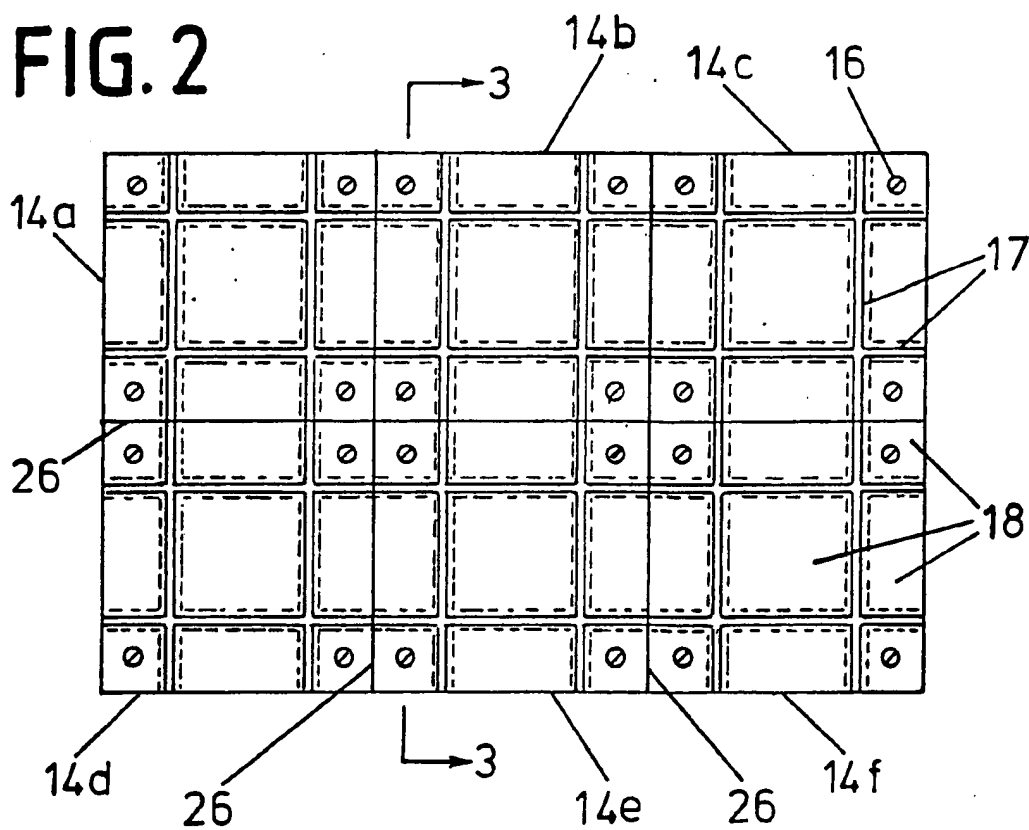
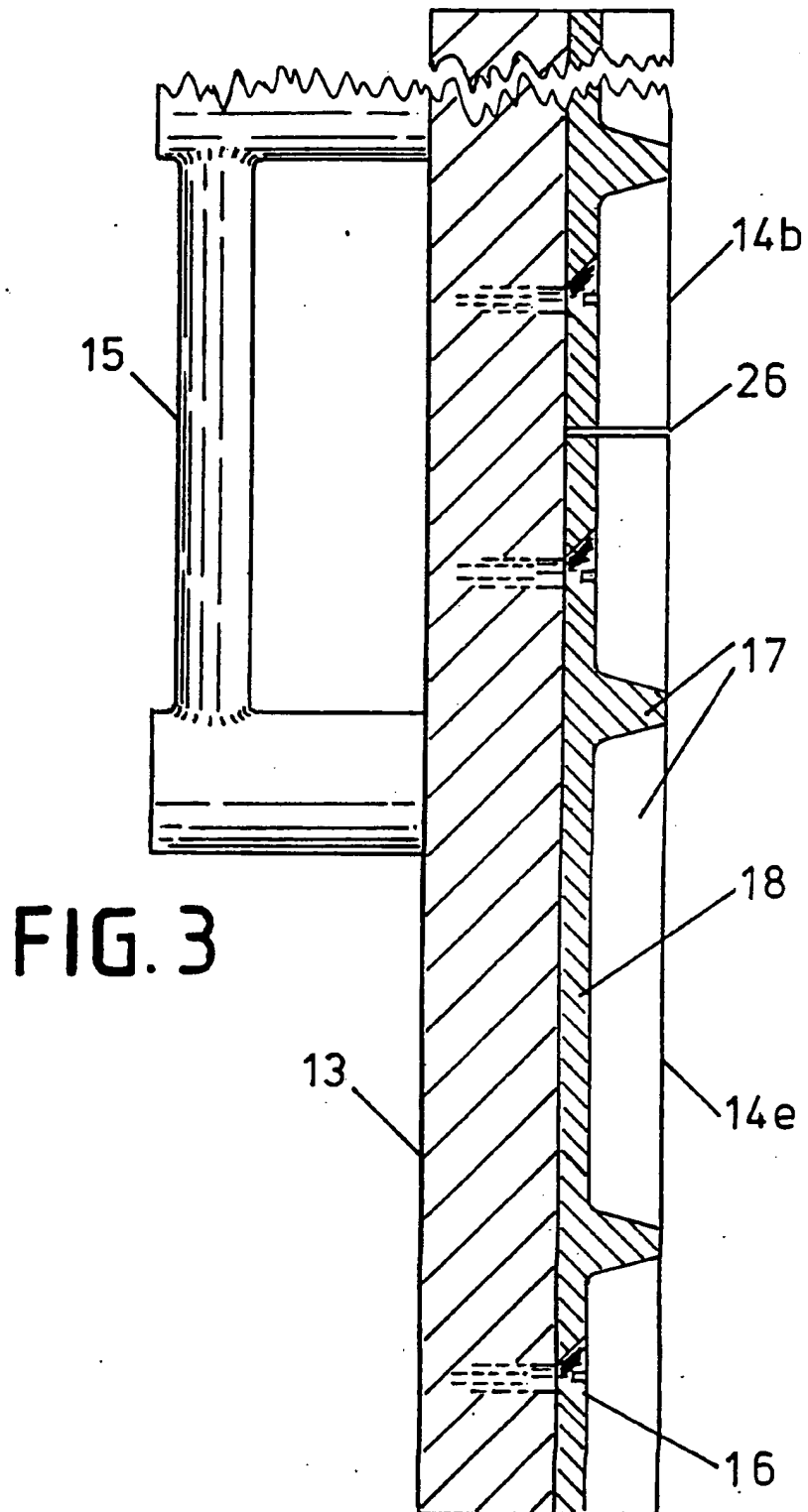


FIG. 2



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3/12

FIG. 4

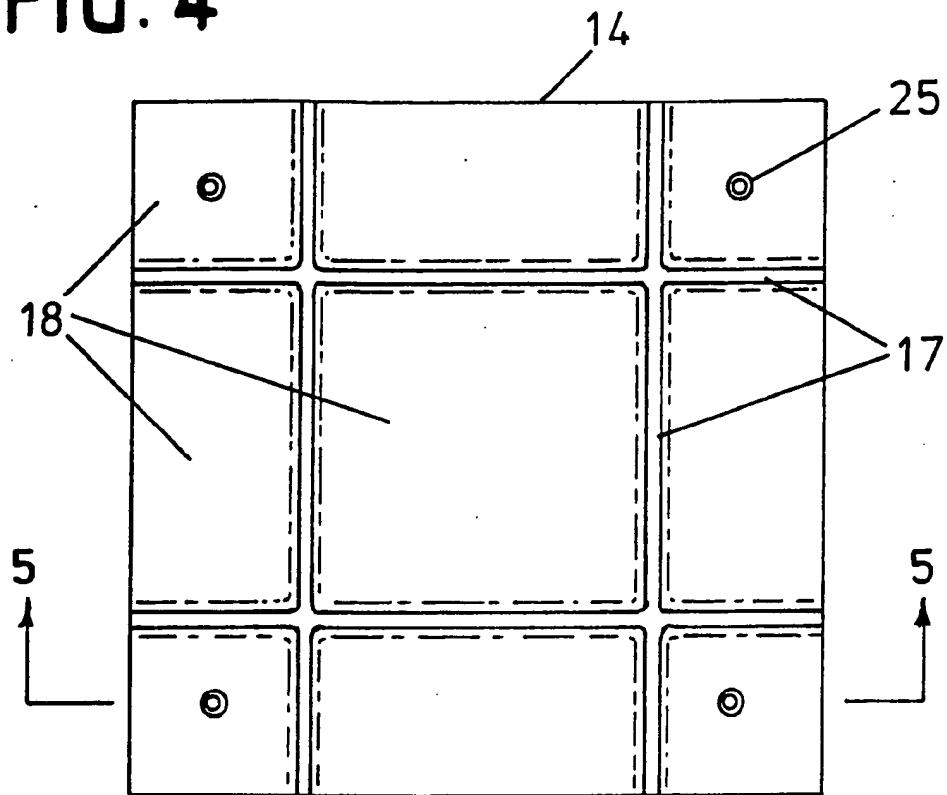
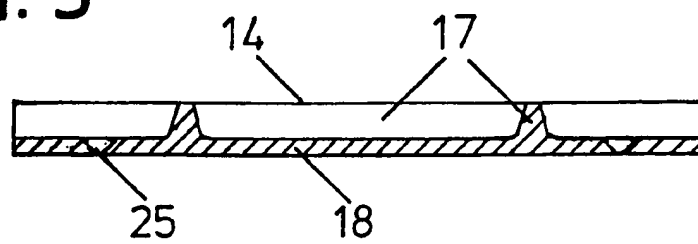


FIG. 5



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FIG. 6

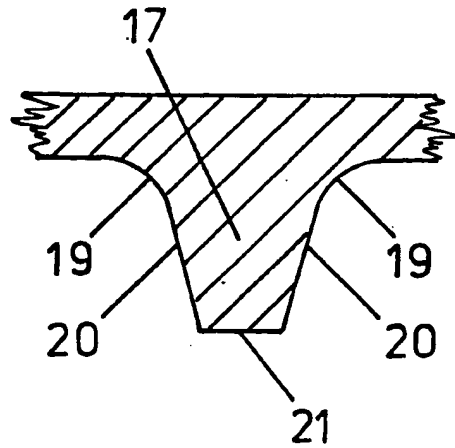
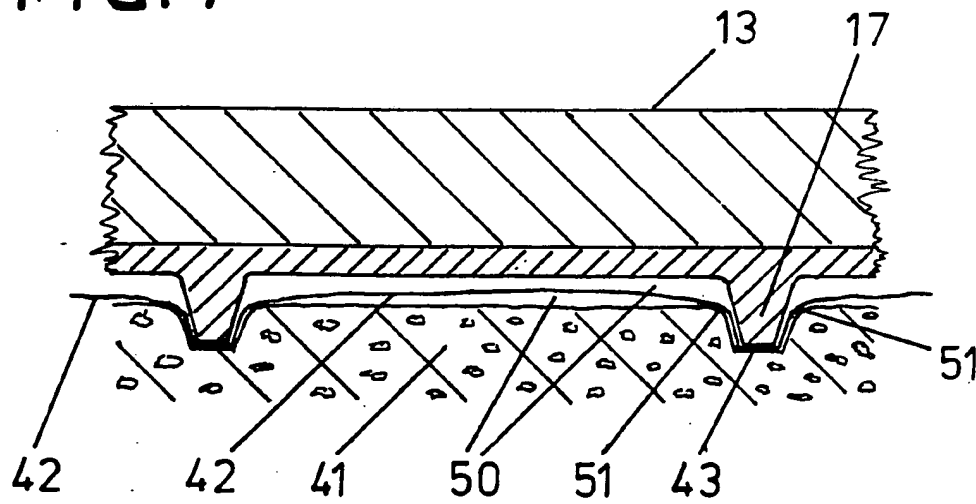


FIG. 7



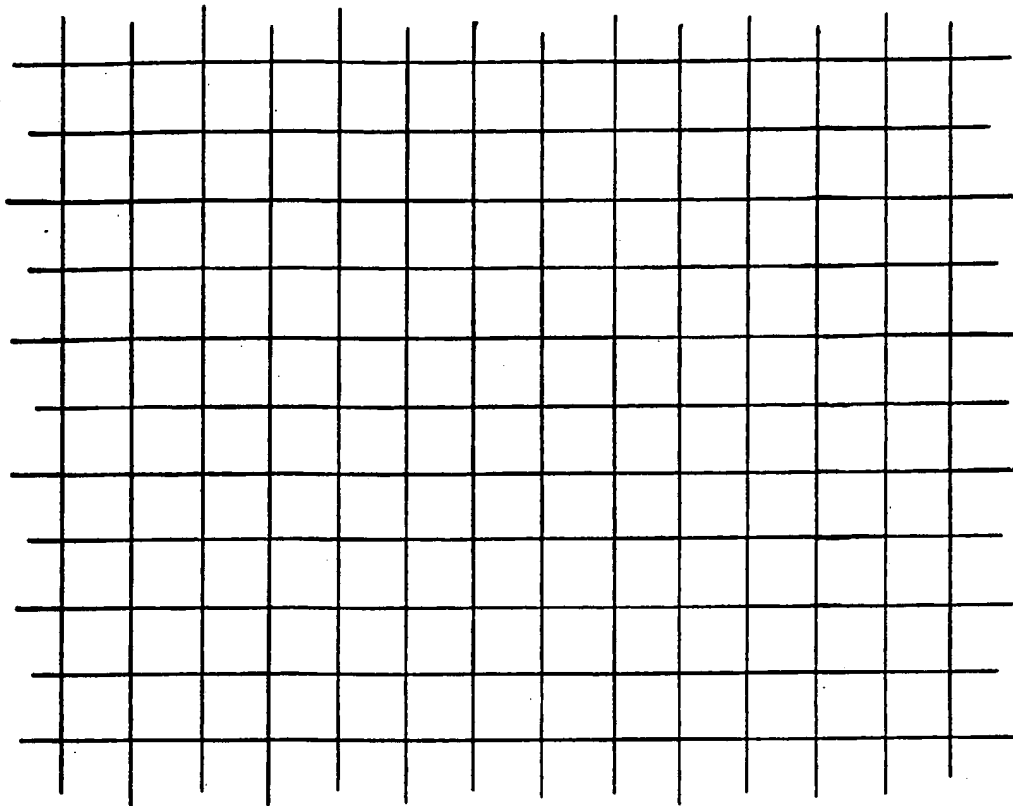


FIG. 8

FIG. 9

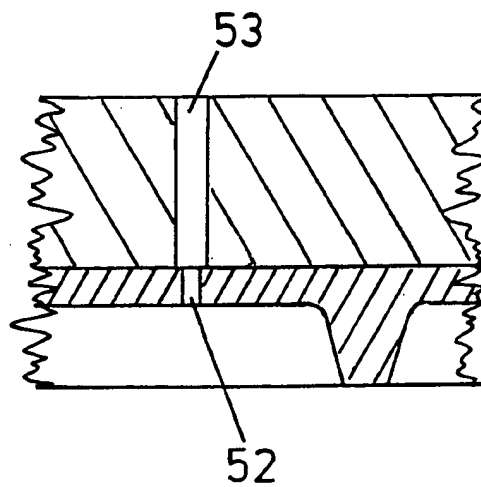


FIG. 10

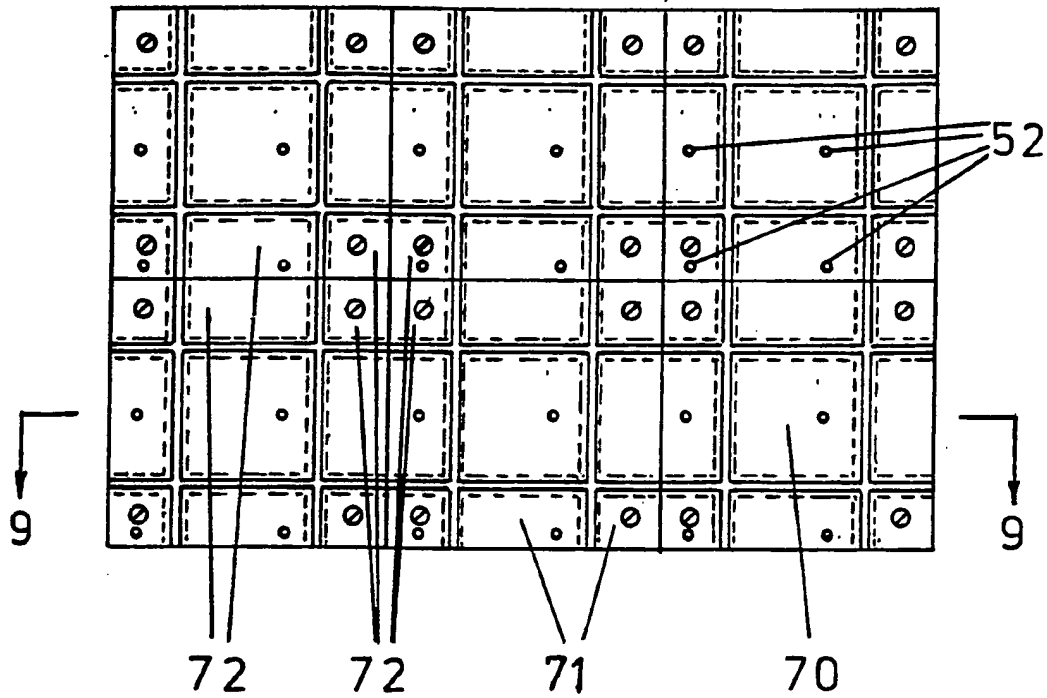


FIG. 11

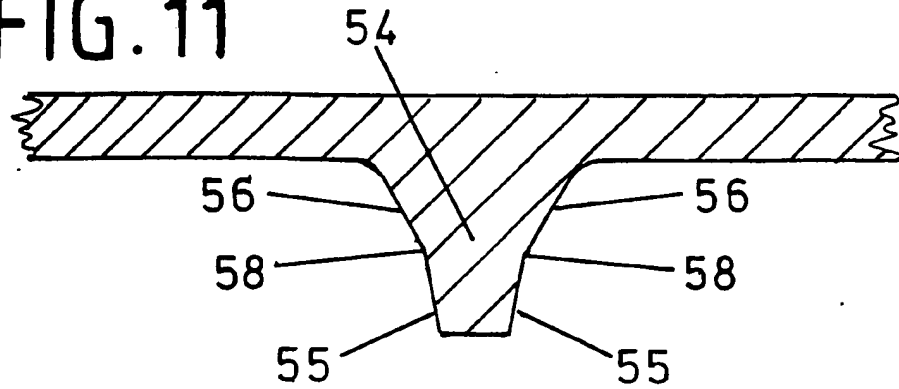


FIG. 12

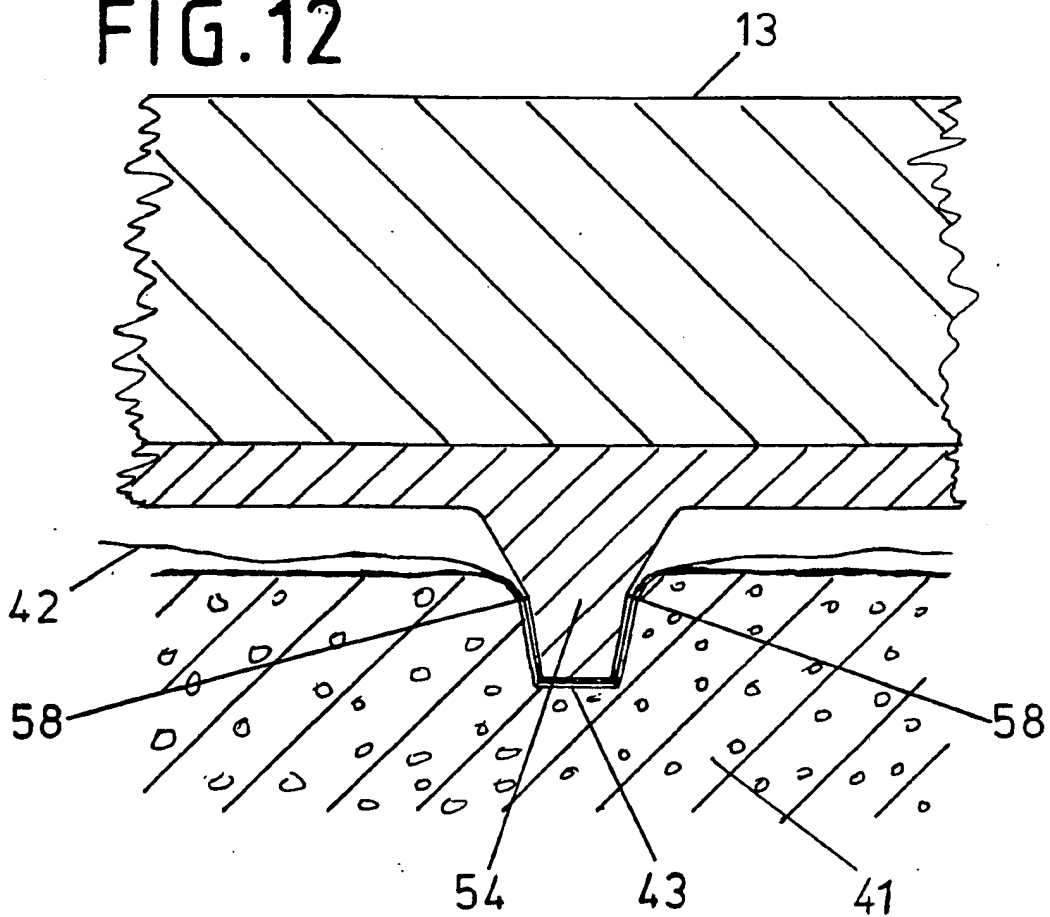




FIG. 13

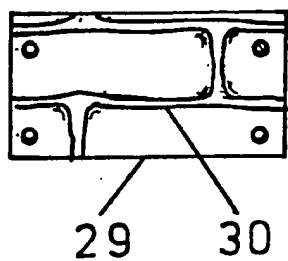


FIG. 14

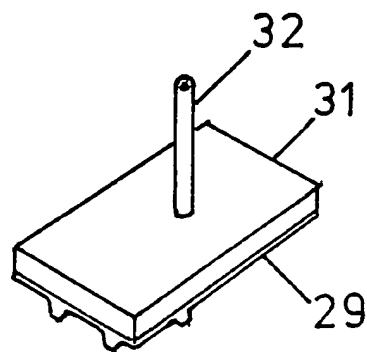


FIG. 15

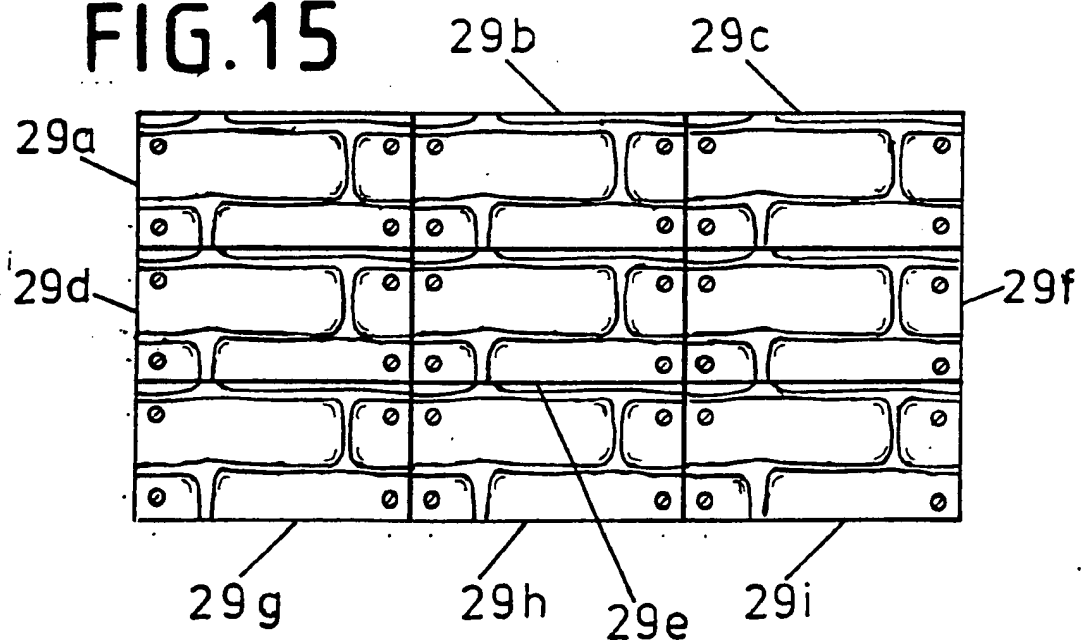


FIG. 16

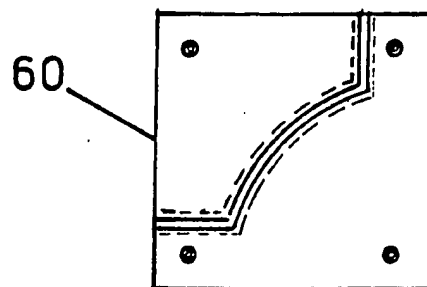


FIG. 17

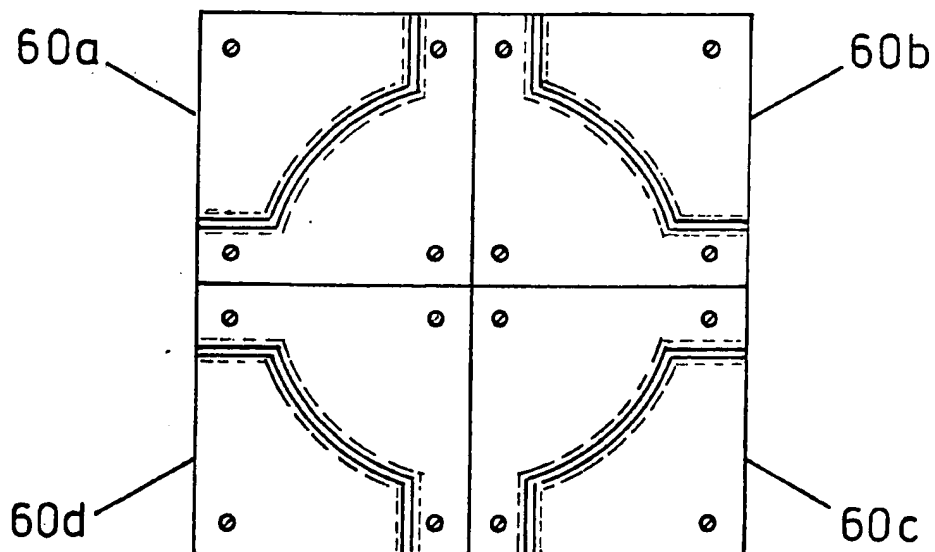


FIG. 18

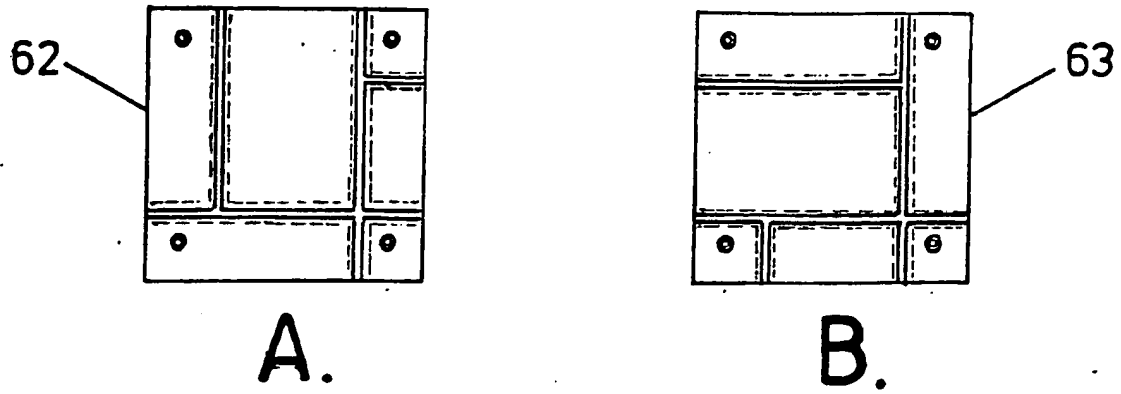
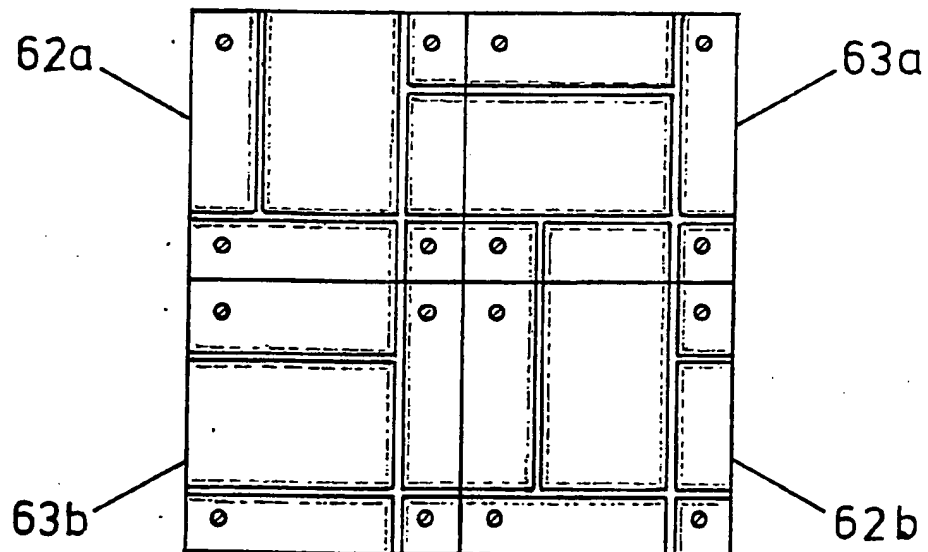


FIG. 19



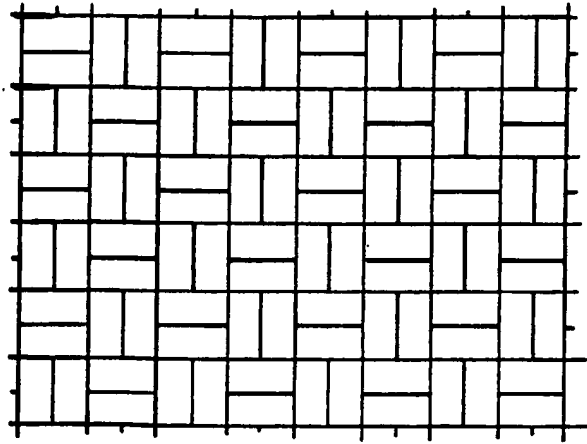


FIG. 20

FIG. 21

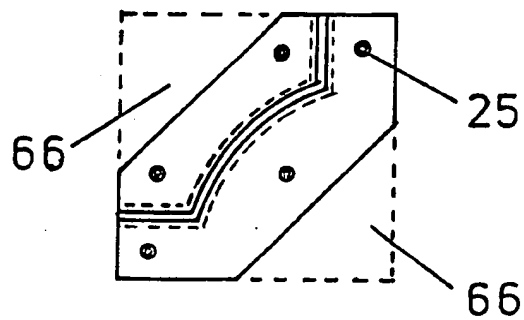


FIG. 22

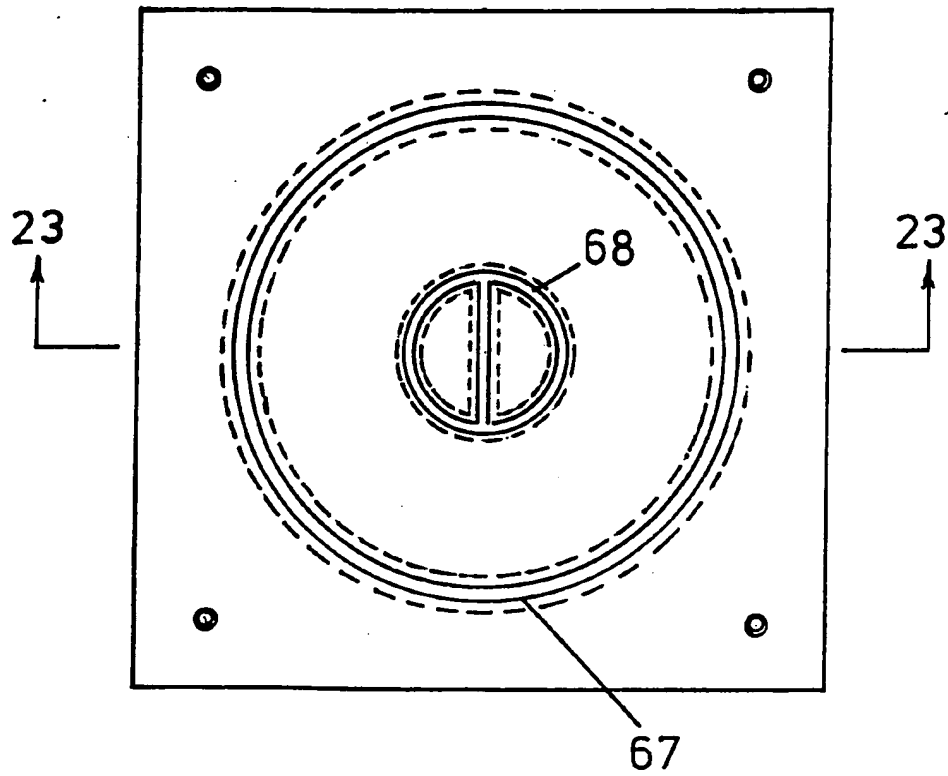


FIG. 23



TOOL FOR IMPRINTING PATTERNS IN CONCRETE

This invention relates to the imprinting of patterns in concrete and in particular to a tool for imprinting such patterns.

The art of imprinting patterns in freshly laid concrete paving or flooring is well known. Known imprinting tools are generally made of metal or plastics in the form of an open framework which includes an arrangement of "V" shaped blades such that when the said tools are applied to the surface of freshly laid concrete and when pressure is applied to the top of the said tools by means of punners, mallets, vibrators or the like, the said blades cause impressions or grooves to be made in the concrete in a manner such as to define patterns which simulate the appearance of brick, cobblestone, stone, tile, slate, slab or the like. By repeated application of the said tools by placing one such tool adjacent to another such tool progressively over the surface of the concrete to be imprinted a plurality of impressions or grooves are made in the concrete. Thus in the prior art entire areas of concrete can be pattern imprinted. Generally, during the known process of imprinting patterns on concrete, workmen stand on the said tools while performing the operation of punning or vibrating or the like in order to avoid walking directly on the freshly laid concrete.

The term "freshly laid concrete" used herein is meant to denote concrete within a few hours of being laid or poured and before it has had time to set hard and therefore whilst the said concrete is in a plastic state.

Known tools as described hereinbefore are generally of such design as to be characteristically expensive, baulky and, when made of metal, heavy. Such known tools do not always provide the workmen with an ideal platform to stand on when performing the operation of punning or vibrating. Also such tools are not ideally suitable for patterns for which the said blade arrangement features large or expansive areas void of such blades. Furthermore, the design of such known tools are such that when said tools are damaged during use the repair of said tools is impracticable. This last mentioned fact and the general method of manufacture places limitations on the size of such known tools.

It is therefore desirable to provide an improved tool which is easy to handle, is well able to support workmen, is suitable for the design of expansive patterns, as defined by the blade arrangement, and which can be manufactured in a range of sizes and shapes from any particular master or master mould. Furthermore, it is desirable that the said tool can be manufactured and assembled from component parts such that the said tool may be repaired at a relatively low cost by the replacement of such component parts. It is also desirable to provide means whereby the depth of the aforesaid impressions or grooves in the aforesaid concrete may be controlled or regulated.

According to one aspect of the present invention there is provided a tool comprising a platform, means for lifting which may be a handle or a plurality of handles or anchor points to receive lifting tackle, means which may be screws, bolts or the like for securing the said means for lifting to the topside of the said platform, an impression plate or a plurality of impression plates arranged, assembled and secured to the underside of the said platform in a two dimensional array of rows and columns in the concept of an X-Y matrix the said impression plates being characterised by a panel having a blade or a plurality of blades which may be "V" shaped the said blades being integrally manufactured, formed, cast or moulded on the underside of the said panel such that the said blades are perpendicular to the plane of the said panel the said blades being arranged such as to define a pattern which may be imprinted in the form of impressions or grooves in or on the surface of freshly laid concrete, and a plurality of fixings which may be screws bolts or the like for securing the said impression plates to the said platform.

According to another aspect of the present invention there is provided means for controlling the depth of the aforesaid impressions or grooves in the said concrete through the limiting effect of air pockets created by entrapped air within closed features of the aforesaid blade arrangement.

According to yet another aspect of the present invention there is provided means for controlling the depth of the aforesaid impressions or grooves in the said concrete through an alternative design of blade which is provided with shaped sides such that a pronounced fillet or taper limits the said grooves to the desired depth.

A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawings in which:

Figure 1 shows in perspective, an imprinting tool;

Figure 2 shows the bottom view of an imprinting tool;

Figure 3 shows an enlarged part sectional view taken along the line 3-3 of Figure 2;

Figure 4 shows the bottom view of an impression plate prior to assembly;

Figure 5 shows a sectional view taken along the line 5-5 of Figure 4;

Figure 6 shows an enlarged part of Figure 5 illustrating in greater detail a sectional view of a blade;

Figure 7 shows a part sectional view of an imprinting tool on freshly laid concrete to illustrate the use of the tool;

Figure 8 shows the pattern produced from a tool provided with impression plates having an arrangement of blades as shown in Figures 2 and 4;

Figure 9 shows an enlarged part sectional view  
taken along the line 9-9 of Figure 10;

Figure 10 shows the bottom view of an alternative embodiment of the present invention wherein there are provided air vents;

Figure 11 shows in part sectional view, the detail of a blade of an alternative embodiment of the present invention wherein the said blade is shaped to provide a means of control of depth of imprinted impressions or grooves;



Figure 12 shows a part sectional view of a tool provided with blades shaped as shown in Figure 11, the said tool being on concrete to illustrate the use of the tool;

Figure 13 shows the bottom view of an impression plate of an alternative embodiment of the present invention wherein the blade arrangement is such as to simulate cobblestones;

Figure 14 shows in perspective a tool provided with an impression plate similar to that shown in Figure 13;

Figure 15 shows the bottom view of a tool provided with a plurality of nine identical impression plates each being similar to the impression plate shown in Figure 13;

Figure 16 shows the bottom view of the impression plate of an alternative embodiment of the present invention wherein a group of identical impression plates are arranged such that the composite arrangement of blades defines a pattern which has a repeatable unit larger than an individual impression plate;

Figure 17 shows the bottom view of a tool provided with a composite group of impression plates comprising a plurality of four identical impression plates similar to the impression plate shown in Figure 16 and each orientated through an angle of 90 degrees relative to adjacent impression plates;

Figure 18 Shows impression plates of an alternative embodiment to the present invention wherein an impression plate having a first arrangement of blades is complementary to an impression plate having a second arrangement of blades such that the composite arrangement of blades of a group of such impression plates defines a pattern which has a repeatable pattern larger than an individual impression plate. The Figure shows as follows:

- A. a bottom view of an impression plate provided with a first arrangement of blades,
- B. a bottom view of an impression plate provided with a second arrangement of blades;

Figure 19 shows the bottom view of a tool provided with a composite group of impression plates comprising a pair of identical impression plates similar to that shown in Figure 18A and a pair of identical impression plates similar to that shown in Figure 18B;

Figure 20 shows the pattern produced from a tool provided with a group of impression plates having a composite arrangement of blades as shown in Figure 19;

Figure 21 shows the bottom view of an impression plate which has been designed to exclude superfluous areas of panel;

Figure 22 shows the bottom view of the impression plate of an alternative embodiment of the present invention wherein there is provided primary blades and secondary blades;

Figure 23 shows a sectional view taken along the line 23-23 of Figure 22.

Referring to the drawings, Figures 1, 2 and 3 illustrate a tool comprising a platform 13, means for lifting 15 which may be handles (shown) or anchor points to receive lifting tackle (not shown), means (not shown) which may be screws, bolts or the like for securing the means for lifting 15 to the topside of the platform 13, a plurality of impression plates 14 at 14a, 14b, 14c, 14d, 14e and 14f, an impression plate 14 being characterised by a panel 18 having a plurality of blades 17, which may be "V" shaped, the blades 17 being integrally manufactured, formed, cast or moulded on the underside of the panel 18 such that the blades 17 are perpendicular to the plane of the panel 18 the blades 17 being arranged such as to define a pattern which may be imprinted in the form of impressions or grooves in or on the surface of freshly laid concrete, and a plurality of fixings 16 which may be screws (a plurality of four shown in each impression plate), bolts or the like for securing the impression plates 14 to the underside of the platform 13. Preferably the fixings 16 are characterised by countersink heads. Preferably the impression plates 14 are spaced from adjacent impression plates by a narrow gap 26. The gap 26 width is typically 0.5mm to 1.5mm.

Figures 4 and 5 illustrate an impression plate 14 prior to assembly for a clearer understanding thereof. A plurality of holes 25 (a plurality of four shown) are provided to receive the aforesaid fixings 16. As mentioned hereinbefore the blades 17 may be "V" shaped although preferably they are characterised as illustrated by Figure 6 which shows a rounded fillet 19, tapered sides 20 and a blunt or flat end 21.

The aforesaid platform 13 may be made of any convenient material having strength adequate to support the weight of workmen and of such weight that the tool is portable. Therefore, the said platform 13 may be of laminated wood, blockboard, plywood or the like. Preferably the said platform 13 is rectangular or square, the precise size and shape being defined by the size, shape and plurality of the aforesaid impression plates 14 which are secured to the underside of the said platform as described hereinbefore. The platform 13 thickness is typically 12mm to 30mm.

Preferably the aforesaid impression plate 14 is cast in aluminium or moulded in plastics by established and known methods. It is not regarded as necessary to described such known methods of casting and moulding.

Preferably the said impression plate 14 is rectangular or square, the precise size and shape being defined by the specific arrangement of said blades 17 selected. The said blade 17 depth is typically 6mm to 17mm. The said flat end 21 width is typically 1mm to 8mm. The said panel 18 thickness is typically 2mm to 6mm.

The said handles 15 can be made in any convenient design and made of any convenient material such as wood, metal, plastics, rope or the like.

The use of a tool according to the present invention will now be described as illustrated by Figure 7. Preferably the freshly laid concrete 41 is levelled, colouring material being applied to the surface of the said concrete if desired and preferably a thin sheet of plastic material 42 is laid on the surface of the said concrete prior to positioning the tool. The tool is positioned as desired and the blades 17 are forced into the said concrete 41 by the application of punners, mallets, vibrators or the like (not shown) to the topside of the platform 13. An impression or groove 43 so formed in the freshly laid concrete 41 is of a depth which is typically from one quarter the depth of the blade 17 to a full depth of the said blade 17 as desired.

During the formation of the aforesaid impressions or grooves 43, air pockets formed from the entrapped air within the closed features or arrangement of blades 17 surrounding the spaces 50 act against the movement of the blades 17 into the said concrete thereby providing means of controlling the depth of the grooves 43 formed in the said concrete and also providing a means of control whereby the aforesaid panels 18 may be prevented from causing undesirable impressions or grooves in the areas of concrete between the grooves 17 such as may be caused by the aforesaid gaps 26 or the heads of the aforesaid fixings 16 when the blades 17 are forced to their full depth into the said concrete. It is understood that some air will escape via the aforesaid gaps 26 and open features or arrangements of blades 17. The aforesaid "closed features" and "open features" of the blade arrangements are to be described hereinafter.

It is preferred that when the platform 13 is made of the aforesaid preferred materials such as laminated wood , blockboard, plywood or the like the said platform 13 may slightly flex, according to the natural tendancies of the material selected, when subjected to the weight of workmen such that the tool conforms to shallow undulations of the surface of the aforesaid concrete.

Furthermore the thin sheet of plastic material 42 presses on the said freshly laid concrete in such way as to form rounded edges 51 in the said concrete which enhance the finished appearance of the said concrete, as do also the impressions formed in the said concrete by the aforesaid blunt or flat ends 21 of the blades 17.

The aforesaid tapered sides 20 of the blades 17 make easy the release of the blades 17 from the impressions or grooves 43 when the tool is removed from the said concrete.

The aforesaid gaps 26 between impression plates 14 are provided as desired so that the aforesaid fixings 16 are not subjected to shear stresses, in the direction of the plane of the aforesaid panel 18, such as may occur if adjacent impression plates are assembled and secured to the platform 13 with said adjacent impression plates in contact with each other.

The pattern of impressions or grooves formed by the use of a tool according to the present invention on the surface of freshly laid concrete as described hereinbefore provides a simulated effect of brick, cobblestone, stone, tile, slate, slab or the like according to the arrangement of blades selected. Figure 8 illustrates the pattern that would result from the use of a tool provided with the specific blade arrangement shown in Figures 2 and 4.

Evidently the arrangements of blades as described herein may include closed features and open features. Examples are illustrated by Figure 10 wherein the blade members surrounding the panel area 70 represent closed features whereas the blade members partially surrounding the panel area 71 represent open features. It is further understood that open features of the blade arrangement of an impression plate may become closed where an impression plate on a tool is located adjacent to another impression plate such as in the case of the blade members surrounding the panel areas 72.

Additional embodiments as now to be described have been represented mainly diagrammatically in order to permit a clearer understanding thereof. Furthermore, in view of the description given in the foregoing for a specific embodiment it is regarded as unnecessary to mention some of the details in association with each of the embodiments since it is clear that they may be employed as a tool for the purpose of imprinting patterns on or in the surface of freshly laid concrete and that they come within the scope of the present invention.

According to one embodiment, air vents are provided to release the aforementioned air entrapped within the aforesaid spaces 50. Such an air vent is provided by means of a first hole 52 in the panel of the aforesaid impression plate 14 and a second hole 53 in the aforesaid platform 13. The said hole 52 and hole 53 are co-centred, positioned and arranged such as to be aligned as illustrated by Figure 9. The air vents as described herein may be provided as desired at any location on the tool where the particular arrangement of blades selected is likely to entrap air during the process of imprinting patterns on or in freshly laid concrete as described hereinbefore. As an example Figure 10 illustrates where a plurality of air vents may be located for a specific arrangement of blades, the location of the air vents being shown by the location of the said first holes 52. The diameter of the first hole 52 is typically 1mm to 8mm. The diameter of the second hole 53 is typically 9mm.

According to one embodiment means are provided whereby the depth of the aforesaid impressions or grooves may be controlled as illustrated by Figures 11 and 12. Figure 11 shows a blade 54 provided with primary tapered sides 55 and secondary tapered sides or fillets 56 the said tapered sides 55 having a more pronounced taper than the said tapered sides 56. It is evident from Figure 12 that when during the process of imprinting impressions or grooves the lower end of the secondary tapered sides or fillets 56 reach the aforementioned groove 43 in the aforesaid freshly laid concrete a greater force is needed to drive the blade 54 any deeper into the said concrete. At that point in the aforementioned process of imprinting a workman has a clear indication that the said grooves 43 are of the desired depth from the greater resistance met. It is evident that the depth of the said impressions or grooves is determined by the point 58 at which the transition from the primary tapered sides 55 to the secondary tapered sides or fillets 56 occurs.

An impression plate as described hereinbefore may be provided with any appropriate arrangement of blades as desired. Preferred arrangements of said blades are selected such as to form impressions or grooves on or in freshly laid concrete to simulate brick, cobblestone, stone, tile, slate, slab or any like pattern. Preferably, such said arrangements of blades as may be included in the design of a specific impression plate represent a repeatable unit of the pattern to be imprinted. The arrangement of blades for the impression plate shown in Figure 4 is an example of an arrangement of blades representing a repeatable unit of a pattern (a tile pattern) and the arrangement of blades for the impression plate shown in Figure 13 is an example of an arrangement of blades representing another repeatable unit of a pattern (a cobblestone pattern) where the said unit of the pattern is the smallest repeatable unit of the pattern. The size and shape of a particular impression plate is defined by the specific arrangement of blades selected as mentioned hereinbefore, said impression plates being preferably rectangular or square. Generally, the said impression plates are typically 200mm to 360mm long by 200mm to 360mm wide.

In order to provide further example herein, Figure 13 shows the underside of an impression plate 29 which is provided with an irregular arrangement of blades 30 which are designed to imprint a simulated cobblestone pattern. Figure 14 shows a tool provided with a small platform 31, an impression plate 29 and a suitable handle 32 (a length of dowel is shown) the said tool being suitable for use as a hand tool to imprint areas of freshly laid concrete where such areas are inaccessible to the larger tools. Figure 15 shows the underside of a tool provided with a plurality of nine identical impression plates 29 at 29a, 29b, and so on.

The term "repeatable unit of a pattern" as used herein is meant to denote that element or part of a pattern which defines the said pattern such that the said element or part of the said pattern may be placed or imprinted adjacent to an identical element or part of the said pattern in repeated steps to extend the said pattern over an area.

According to the preferred embodiments a plurality of identical impression plates are secured to the underside of a platform in an arrangement of rows and columns or two dimensional array which is conceptually in the form of an X-Y matrix.

The arrangement of impression plates shown in Figure 2 is an example of a specific arrangement in which a plurality of six impression plates 14a, 14b, 14c, 14d, 14e and 14f may be said to be arranged in a formation such that there is a first row of impression plates 14a, 14b, 14c adjacent to a second row 14d, 14e, 14f and such that there is a first column 14a, 14d a second column 14b, 14e and a third column 14c, 14f, the whole arrangement thereby representing a 2x3 array or matrix of impression plates. It should be readily understood that various embodiments of the tool may be provided with different arrangements of impression plates including the preferred arrangements listed in the table as follows:

	one	impression plate representing a	1x1 array;
a plurality of	two	" plates	" " 1x2 " ;
" "	four	" "	" " 2x2 " ;
" "	six	" "	" " 2x3 " ;
" "	eight	" "	" " 2x4 " ;
" "	nine	" "	" " 3x3 " ;
" "	twelve	" "	" " 3x4 " ;
" "	sixteen	" "	" " 4x4 " ;
" "	twenty	" "	" " 4x5 " ;
" "	twenty-four	" "	" " 4x6 " ;
" "	twenty-eight	" "	" " 4x7 " ;
" "	thirty-two	" "	" " 4x8 " ;

and so on. It is understood that the above table does not include all arrays possible.

Examples are provided by Figure 14, which shows a tool provided with an impression plate the said impression plate representing a 1x1 array, and Figure 15, which shows an arrangement of a plurality of nine impression plates representing a 3x3 array. Furthermore, it is evident that embodiments of the tool provided with impression plates in arrangements other than the aforesaid preferred arrangements fall within the scope of the present invention. Also, tools provided with arrangements of impression plates which include positions in the array vacant of impression plates fall within the scope of the present invention, said vacant positions in the array of impression plates being desirable where arrangements of blades are not desired in particular positions of the said array as may be determined by a desired pattern.

As mentioned hereinbefore, the precise size and shape of the aforesaid platform is defined by the size, shape and plurality of the aforesaid impression plates. Therefore it is understood that the precise size and shape of a tool is similarly defined by the size, shape and plurality of the said impression plates. A tool provided with 4x8 array of impression plates may be typically 122cm (4 feet) wide by 244cm (8 feet) long.



Other embodiments include tools provided with a plurality of identical impression plates arranged in a composite group such as to define a repeatable unit of the pattern to be imprinted in or on freshly laid concrete. An example of a said composite group is illustrated. Figure 16, shows an impression plate 60, and Figure 17 shows a composite group comprising a plurality of four identical impression plates 60 arranged in such a way that impression plate 60b is orientated at an angle of 90 degrees relative to impression plate 60a and so on, the blades of the said composite group of impression plates thereby defining a repeatable unit of a pattern.

Other embodiments include tools provided with a plurality of impression plates which are provided with different but complementary arrangements of blades such that the said impression plates may be arranged in a composite pair or group such as to define a repeatable unit of the pattern to be imprinted in or on freshly laid concrete. An example of a said composite group is illustrated. Figure 18A, shows an impression plate 62 provided with a first arrangement of blades, and Figure 18B, shows an impression plate 63 provided with a second arrangement of blades which are complementary to the said first arrangement of blades, and Figure 19 shows a composite group comprising a pair of impression plates 62 and a pair of impression plates 63, the blades of the said composite group of impression plates thereby defining a repeatable unit of a pattern. Figure 20 illustrates the pattern that would result from the use of a tool provided with the arrangement of blades shown in Figure 19.

Tools provided with the aforesaid composite groups of impression plates may be used to imprint patterns when the smallest repeatable unit of the desired pattern is larger than the preferred sizes of impression plates. Furthermore it is understood that the said composite groups of impression plates may be arranged and secured to a platform as described hereinbefore.

The composite groups shown in Figures 17 and 19 as described hereinbefore are arrangements of impression plates representing 2x2 arrays or matrices. Evidently, other preferred arrangements which can include such said 2x2 arrays are arrays 2x4, 2x6, 4x4, 4x6 and so on.

It is understood that the aforesaid panels of the aforesaid impression plates may be designed to exclude areas of the said panels which are not necessary for the physical support of the aforesaid blades. An example is illustrated by Figure 21 which shows the underside of an impression plate designed to exclude panel material from the areas 66. It is understood that the aforesaid holes 25 to receive the aforesaid fixings may be located in the said panel wherever desired.

According to one embodiment of the present invention the aforesaid impression plates are characterised by an arrangement of primary blades and an arrangement of secondary blades of reduced depth relative to the depth of the said primary blades such that when the said primary blades are forced into the freshly laid concrete to form impressions or grooves in the said concrete as described hereinbefore the said secondary blades may form shallow impressions on the surface of the said concrete. The said arrangement of secondary blades may define a pattern, motif, sign of the zodiac, logo or the like as desired and may be used to imprint features to enhance the finished appearance of the said concrete. An example is illustrated by Figures 22 and 23 which show an impression plate characterised by having primary blades 67, which are preferably characterised as described hereinbefore for blades 17 or blades 54, and secondary blades 68, which may be characterised as desired or preferably as described hereinbefore for blades 17, the said secondary blades 68 being essentially of reduced depth relative to the primary blades 67.

It is understood that impression plates characterised by primary and secondary blades as described hereinbefore may be located anywhere in an arrangement or array of impression plates having panels of like size and shape as the panels of the first mentioned impression plates, as desired.

Evidently, tools according to the present invention may be used to imprint patterns in freshly laid concrete or cement on horizontal, sloping and vertical surfaces as desired.

Tools as described herein may be manufactured and supplied as fully assembled items and may be supplied in the form of kits of component parts as desired. A said kit may comprise some or all of the component parts required for a tool or a plurality of tools and/or a said kit may comprise an impression plate, or a plurality of impression plates, and some or all of the other component parts as may be included in a tool or a plurality of tools and/or a said kit may comprise a plurality of impression plates. Furthermore, individual impression plates may be supplied as desired.

The aforesaid fact that the tools as described herein may be manufactured and supplied as fully assembled items and may also be supplied in the form of kits makes tools according to the present invention particularly suitable for supplying Professional and Do-it-yourself (DIY) users alike.

From the foregoing it will be readily evident that there has been provided an improved tool which may be manufactured in a wide range of sizes and shapes from assemblies which include castings or mouldings from any particular master or master mould of an impression plate respectively. Such tools are relatively light in weight and are therefore portable and are also well able to support the weight of workmen by virtue of the strength and unbroken surfaces of the platforms. Furthermore, such tools are ideally suitable for the imprinting of patterns for which the blade arrangements feature expansive areas void of blades. It is also of distinct advantage that such tools may be dismantled so that some or all of the component parts so obtained be used in the assembly of tools of other sizes and shapes including hand tools and that such tools may be easily repaired, when necessary, by the replacement of component parts.

CLAIMS

1. A tool comprising:

a platform;

means for lifting, the said means for lifting being secured to the topside of the said platform;

means for securing the said means for lifting;

at least one impression plate, the said impression plate being characterised by a panel having a plurality of blades integrally formed on the underside of the said panel whereat the said blades are perpendicular to the plane of the said panel, the said blades being arranged to define patterns which may be imprinted in the form of impressions or grooves in or on the surface of freshly laid concrete, the said impression plate being secured to the underside of the said platform; and

a plurality of fixings for securing the said impression plate.

2. A tool according to Claim 1, wherein a plurality of said impression plates are secured to the underside of the said platform in an arrangement of at least one row and at least one column in the manner of a two dimensional array.

3. A tool according to Claim 1 or 2, wherein the arrangement of impression plates is in the form of an X-Y matrix.

4. A tool according to any one of the preceding Claims, wherein the impression plates are secured to the underside of the platform in a manner substantially as hereinbefore described with reference to Figures 1, 2 and 3.

5. A tool according to any one of the preceding Claims, wherein the size and shape of the platform is at least equal in size and shape to the area defined by the perimeter of the combined assembly of impression plates.

CLAIMS

6. A tool according to any one of the preceding Claims, wherein the means for lifting is at least one handle.

7. A tool according to any one of the Claims 1 to 5, wherein the means for lifting is at least one anchor point to receive lifting tackle.

8. A tool according to any one of the preceding Claims, wherein the means for securing the means for lifting are bolts.

9. A tool according to any one of the preceding Claims, wherein the fixings for securing the impression plates are screws.

10. A tool according to any one of the Claims 1 to 8, wherein the fixings for securing the impression plates are bolts.

11. A tool according to any one of the preceding Claims, wherein the fixings for securing the impression plates are characterised by countersink heads, the said countersink heads being fitted flush with the underside surface of the panels of the said impression plates.

12. A tool according to any one of the preceding Claims, wherein the impression plates abut adjacent impression plates.

13. A tool according to any one of the Claims 1 to 11, wherein the impression plates are spaced from adjacent impression plates by a narrow gap.

14. A tool according to any one of the preceding Claims, wherein the platform is rectangular in shape and the impression plates are rectangular in shape.

15. A tool according to any one of the preceding Claims, wherein the impression plates are substantially rectangular in shape and wherein areas of panel material not necessary for the physical support of the blades are excluded.

16. A tool according to any one of the Claims 2 to 15, wherein the array of impression plates includes at least one vacant position in the said array.

17. A tool according to any one of the preceding Claims, wherein the arrangement of blades includes closed features wherein at least one area of impression plate panel is surrounded by blades.

18. A tool according to Claim 17, wherein at least one air pocket formed from entrapped air within closed features of the blade arrangement acts against the movement of the blades into the concrete as a means of control of the depth of the impressions or grooves formed in the said concrete.

19. A tool according to any one of the preceding Claims, wherein there is provided at least one air vent to release air entrapped within closed features of the blade arrangement.

20. A tool according to Claim 19, wherein there is provided at least one air vent by means of a first hole in the panel of an impression plate and a second hole in the platform, the said first hole and the said second hole being co-centred, positioned and arranged generally perpendicular to the plane of the said panel.

21. A tool according to any one of the preceding Claims, wherein the blades are "V" shaped in cross-section.

22. A tool according to any one of the Claims 1 to 20, wherein the blades are characterised by a flat end, tapered sides and a rounded fillet.

23. A tool according to any one of the Claims 1 to 20, wherein the blades are substantially as hereinbefore described with reference to Figure 6.

24. A tool according to any one of the Claims 1 to 20, wherein the blades are characterised by primary tapered sides, secondary tapered sides and a transition from the said primary tapered sides to the said secondary tapered sides, the said secondary tapered sides having a more pronounced taper than the said primary tapered sides, the said primary and secondary tapered sides providing a means of controlling the depth of the impressions or grooves formed in the concrete.

25. A tool according to any one of the Claims 1 to 20, wherein the blades are substantially as hereinbefore described with reference to Figure 11.

26. A tool according to any one of the preceding Claims, wherein there is provided a plurality of identical impression plates.

27. A tool according to any one of the Claims 1 to 25, wherein at least two identical impression plates are arranged in a different orientation relative to each other to form a composite group of impression plates, the arrangement of blades on the said impression plates defining a repeatable unit of a pattern, the said unit of the pattern being larger than an individual impression plate within the said composite group.

28. A tool according to any one of the Claims 1 to 25, wherein at least two impression plates are provided with different arrangements of blades, the said impression plates being arranged to form a composite group of impression plates, the arrangement of blades on the said impression plates defining a repeatable unit of a pattern, the said unit of the pattern being larger than an individual impression plate within the said composite group.

29. A tool according to any one of the preceding Claims, wherein the panels of the impression plates are approximately 4mm ( $\frac{3}{16}$  inch) thick.

30. A tool according to any one of the preceding Claims, wherein at least one impression plate has blades as defined hereinbefore as primary blades and wherein the said impression plate is further characterised by a plurality of secondary blades of reduced depth relative to the said primary blades, the purpose of the said secondary blades being to form on the concrete shallow impressions relative to the impressions or grooves formed by the said primary blades.

31. A tool according to any one of the preceding Claims, wherein the platform is made of laminated material.

32. A tool according to any one of the preceding Claims, wherein the platform is made of wood.

33. A tool according to any one of the preceding Claims, wherein the impression plates are cast.

34. A tool according to any one of the Claims 1 to 32, wherein the impression plates are moulded.

35. A tool according to any one of the Claims 33 and 34, wherein the impression plates are made of aluminium.

36. A tool according to any one of the Claims 33 and 34, wherein the impression plates are made of plastics.

37. A kit of component parts prior to assembly comprising: the component parts prior to assembly for at least one tool as defined in any one of the preceding Claims.



38. An impression plate according to any one of the impression plates defined in any one of the preceding Claims.

39. An impression plate substantially according to any one of the impression plates as hereinbefore described with reference to any of the figures 4, 5, 13, 16, 18, 21, 22 and 23.

40. A kit comprising:  
a plurality of impression plates according to any one of the Claims 38 and 39.

41. A kit according to Claim 40, and further comprising:  
at least one component part prior to assembly of at least one of any one of the other component parts defined in any one of the Claims 1 to 37.

42. An impression plate substantially as hereinbefore described with reference to any of the accompanying drawings.

43. A tool for imprinting patterns in freshly laid concrete substantially as hereinbefore described with reference to any of the accompanying drawings.